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August 27 2010

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VIA FEDERAL EXPRESS

Ms. Karen Melvin
Associate Division Director, Office of Enforcement
Hazardous Site Cleanup Division
U.S. Environmental Protection Agency, Region III
Oil and Prevention Branch (3HS61)
1060 Chapline Street
Wheeling, WV 26003

Re: Range Resources Appalachia, LLC's Response to June 11, 2010 Request for Information

Dear Ms. Melvin:

Enclosed please find the response ("Response") of Range Resources – Appalachia, LLC ("Range Resources") to the information request dated June 11, 2010 (the "Request") of the U.S. Environmental Protection Agency ("EPA"), which was received by Range Resources on June 14, 2010. Per my discussions with James Van Orden, the EPA granted Range Resources until August 27, 2010, to submit this Response. We truly appreciate EPA's understanding and allowance of additional time to respond.

Respectfully, Range Resources wishes to make clear that it is providing this information in order to assist in EPA's information gathering efforts. The information request states that EPA "received notification that Range discharged oil and/or hazardous substances in quantities that may be harmful in violation of Section 311(b)(3) of the Federal Water Pollution Control Act, 33 U.S.C. § 1321(b)(3) (the "Act")." It is not clear or known to Range who provided EPA with such a notification. Range Resources did not make any such notification because it believed then and still believes that the discharge that occurred did not involve a discharge of oil or hazardous substances in quantities that may be harmful in violation of the Act. Thus, there was no duty to report this incident to the EPA.

Without waiving these concerns, Range Resources is willing to provide this assistance to the EPA and encloses its Response to that end. As I discussed with James Van Orden, in this initial response, Range Resources' Response is limited to the pipeline discharge incident. We appreciate that, as part of its investigation efforts, EPA has requested information that is more broadly applicable to operations that are unrelated to the incident. Please be assured that Range Resources will be willing to supplement this Response, as appropriate, if it is necessary to provide additional information. We respect the fact that EPA is not familiar with Range Resources' operations and the circumstances surrounding the

incident and thus the Request was made broadly. After EPA reviews this Response, we suggest a conference call or meeting to ensure an adequate understanding has been achieved and to determine if additional information is necessary. Range Resources will continue to cooperate to fulfill any such necessary information requests.

We hope that the enclosed information is of assistance to you. Please do not hesitate to contact me with any questions or concerns you may have.

Sincerely,

Kenneth S. Komoroski

KSK:

cc: Carla Suszkowski, P.E.
James Van Orden, Esquire

Range Resources-Appalachia, LLC's Responses to the United States Environmental Protection Agency's June 11, 2010 Request for Information

The request for information (the "Request") of the U.S. Environmental Protection Agency (the "EPA") dated June 11, 2010 seeks to obtain information regarding a discharge of water which occurred on October 6, 2009 in conjunction the operations of Range Resources-Appalachia, LLC ("Range Resources") near and/or at Kearns Unit Well Nos. 1H, 2H, 3H, 4H, 5H, and 6H in Hopewell Township, Washington Co., Pennsylvania (the "Pipeline Discharge"). The Request was issued under the auspices of obtaining information regarding a violation of Section 311(b)(3) of the Federal Water Pollution Control Act, 33 U.S.C. § 1321(b)(3). Section 311(b)(3) prohibits discharges of hazardous substances in excess of quantities as provided by 40 C.F.R. § 117.3. Nothing identified as a "hazardous substance" was released in prohibited amounts as a result of the Pipeline Discharge. Consequently, no reportable release occurred and the EPA's Request is without legal basis under the identified statutory or regulatory authority.

Subject to and without waiving its objections to the Request, Range Resources voluntarily provides the following responses ("Responses"), which are limited to the Pipeline Discharge. To the extent the Request seeks information not pertaining to the Pipeline Discharge, such information requests are both beyond the EPA's investigatory authority as provided by 33 U.S.C. § 1321(b)(3) and 40 C.F.R. § 117.3 and is unreasonable under the given circumstances.

The Request seeks information pertaining to a "Facility", a term defined in the EPA's Enclosure 1. Range Resources notes that the definition of "Facility" pertains to structures, equipment or pipelines used solely in conjunction with oil. As Range Resource's operations are in the nature of natural gas development and production, Range Resources regards the use of the term "Facility" as defined in the Request as ambiguous. Consequently, Range Resources has voluntarily deemed the information requests using the term "Facility" as seeking information related to structure, equipment and pipeline used in connection with Range Resource's natural gas operations and has responded appropriately thereto, subject to the above-noted limitations, even though Range Resources did not transport or release any oil from the Pipeline.

1. Identify all substances released from the Facility in connection with the above referenced incident. Specifically, identify:

   a. The name and Chemical Abstract Services ("CAS") Number for each substance discharged;

   b. For oils, identify the type and grade;

   c. Provide the quantity, concentration of each substance discharged and the method by which the concentration was measured or estimated. For mixtures, provide the name, quantity, and concentration of each constituent of that mixture

   d. Provide the solubility and specific gravity of each substance discharged.

Response: The material that was discharged was a mixture of flowback water and freshwater ("diluted flowback water"). Range Resources is currently achieving its goal of recycling and reusing all flowback waters. Flowback water results after hydraulic fracturing well stimulation. The produced flowback water does contain small amounts of sand and small concentrations of additives that are introduced into a well for the purposes of hydraulic fracturing. This water also contains small concentrations of salts and minerals that are dissolved from the shale formation. Range Resources is unable to specifically identify the sources, the precise contents, or the concentrations of materials that were released. Flowback water from several wells was transported to an impoundment where freshwater was added for recycling and reuse. This combination of flowback water and freshwater was being pumped to another location to be used for future hydraulic fracturing operations when the discharge occurred due to a manufacturing defect in a pipefitting. Although the precise sources of the material actually released is not precisely known, a sample of diluted flowback water was taken from the piping involved and sent for characterization with the following results:

- pH = 7.7
- Chloride = 11,000 mg/L
- Specific Gravity = 1.015
- Hardness = 37.4 mg/L
- Calcium = 1503 mg/L
- Iron = 3 mg/L
- Bicarbonate = 146 mg/L

Frac water typically utilized by Range Resources consists of approximately 99.86 percent water (94.62 percent) and sand (5.24 percent). Frac water additives other than water and sand are typically used as follows:

Additive Type	Compounds	Approximate Concentration
Scale inhibitor	Ethylene glycol, alcohol, and sodium hydroxide	.01 percent
Antimicrobial agent	Glutaraldehyde, ethanol, and methanol	.06 percent
Friction reducer	Polyacrylamide	.05 percent
Diluted Acid	Hydrochloric acid	.03 percent

Based upon the chlorides concentration, it is estimated that the flowback water was diluted approximately 4:1, freshwater:flowback water. Based upon DEP Form 26R information, no reportable quantity release occurred. This is based upon a calculation that hazardous substances with a reportable quantity of one pound would have to be present at a concentration above 50 ppm; hazardous substances with a reportable quantity of ten pounds would have to be present at a concentration above 500 ppm; and etc. Based upon these calculations, no hazardous substances were discharged above reportable quantities. Further, there was no oil present or released.

2. Describe the physical source (including, but not limited to vehicle, outfall, tank, container, pipe, ditch, conduit, or equipment) at the Facility from which the oil and/or hazardous substance or substances (the term "substance" as used here includes both oils and hazardous substances) initially was discharged on or around October 6, 2009. If the substance was discharged from more than one source, please identify each specific source.

Response: **The material discharged did not contain any oil or any hazardous substances in reportable quantities. Diluted flowback water was released at the point of the failure of a 90 degree elbow coupling (the "Elbow") in an 8-inch diameter PVC pipeline ("Pipeline") used to transport diluted flowback water collected at the Bednarski Impoundment over a distance of approximately six miles to the Kearns Impoundment for use/re-use in hydraulic fracturing operations at the Kearns Unit. The Pipeline was laid through a culvert under Cherry Road using PVC pipe and the Elbow. The Elbow, located at N40 12' 39.6" and W80 23' 51.2", failed and ruptured. The manufacturer inspected the Elbow and identified it as being defective from manufacture.**

3. Provide the total quantity of undiluted substance(s) released from the Facility in gallons for oils and in pounds for hazardous substances.

Response: **Range Resources estimated that approximately 250 barrels (10,000 gallons) of diluted flowback water was released. Of that amount, approximately 500 gallons were removed via vacuum truck. There was no oil released and no measureable amounts in pounds of any hazardous substances.**

4. List the location of the discharge, including the closest street address, the city, county, state, zip code, and provide the Global Positioning System ("GPS") coordinates

Response: **The discharge occurred at a location in Hopewell Township, Pennsylvania with no nearby street address, at or about N40 12' 39.6" and W80 23' 51.2".**

5. List the starting time, date, and duration of the discharge and the time and date when the discharge entered a waterway.

Response: **On October 6, 2009 at approximately 7:00 p.m., Red Oak Water Transfer ("Red Oak"), the contractor engaged in the transfer of the diluted flowback water**

between the Bednarski Impoundment and the Kearns Impoundment, noted the loss of pressure at a pump on the Pipeline, signifying a potential leak. Red Oak personnel immediately turned off the pump, cutting the flow of water in the Pipeline, and followed the Pipeline to discover the ruptured Elbow. The released diluted flowback water entered an unnamed tributary of Brush Run.

6. List the time and date of the discovery of the discharge and the person(s) who made the discovery.

Response: On October 6, 2009 at approximately 7:00 p.m., Red Oak, the contractor engaged in the transfer of the diluted flowback water between the Bednarski Impoundment and the Kearns Impoundment, noted the loss of pressure at a pump on the Pipeline, signifying a potential leak. Red Oak personnel immediately turned off the pump, cutting the flow of water in the Pipeline, and followed the Pipeline to discover the ruptured Elbow.

7. List the federal and state agencies, if any, to which the owner and/or operator reported the discharge(s), the dates and times on which the reports were made, and the name(s) and title(s) of the person(s) who made the reports.

Response: Upon the discovery of the discharge, Environmental & Safety Technician, Jeremy Matinko of Range Resources, reported the spill to Inspector Supervisor Richard Freese of the Pennsylvania Department of Environmental Protection ("DEP") at 7:40 p.m. Additionally, Carla Suszkowski, Range Resource's Director, Environmental and Regulatory, contacted DEP Inspector Supervisor Mike Arch.

8. Identify the first body of water that the substance reached. Identify the actual or estimated quantity of the substance(s) that entered that water body. Describe the location of any other water bodies that the substance(s) subsequently entered, including the actual

or approximate distance from the Facility. In addition, state the actual or estimated quantity of the substance(s) that entered those additional water bodies.

Response: **The diluted flowback water reached a very small unnamed tributary of Brush Run. Range Resources is unable to provide an estimate of the quantity of the diluted flowback water which reached the unnamed tributary except that, as discussed above, approximately 10,000 gallons were discharged from the Pipeline.**

9. Identify any storm drains or sewers through which the substances flowed, and identify the waters to which those storm drains or sewers subsequently drain. State the actual or estimated quantity of the substance(s) that entered the storm drain or sewer.

Response: **There were no storm drains or sewers through which the water flowed.**

10. Identify whether each water identified in response to Questions 8 and 9 was, at the time of the spill, a "navigable water" as defined in Enclosure 1, a tributary of a navigable water; and/or physically connected to a navigable water. Identify all such navigable waters by name and identify the type of body of water (e.g. river, stream, lake, creek, or other type of body of water).

Response: **The diluted flowback water reached a small, unnamed tributary of Brush Run that is not navigable water. Brush Run is a "blue line" stream on USGS topographic maps.**

11. If no navigable waters are identified in response to Questions 10, identify whether the water system at any time connects with or flows into any hydrological system (such as a creek system). If so, identify the flow, extent, and duration of the connection to that system.

Response: **The diluted flowback water reached a small, unnamed tributary of Brush Run that is not navigable water. Brush Run is a "blue line" stream on USGS topographic maps. Range Resources does not know the flow, extent and duration of the connection with Brush Run or the creek system.**

12. State the flow in cubic feet per second of each water body described in response to Questions 8 and 9. If there is no gauge station in the vicinity, please estimate the flow and provide the basis for that estimate.

Response: **There is no gauge station located on the small, unnamed tributary of Brush Run and Range Resources is unable to provide a meaningful estimate of the flow of the tributary at the time of the Pipeline Discharge.**

13. Provide a description and the location of any adjoining shoreline upon which that substance may have reached. In addition, state the quantity of the substance that reached the adjoining shoreline.

Response: **The material discharged was water and did not appear to, nor would it be expected to, contact any adjoining shoreline.**

14. For all discharges of oil to navigable waters, adjoining shorelines to navigable waters, or to any other water/shoreline, please indicate the following:

a. Did you observe from the oil a film, sheen, discoloration or iridescent appearance on the surface or shoreline of any water? If yes, please describe your observations;

Response: **There was no oil released.**

b. Did, to your knowledge, any other person observe from the oil a film, sheen, discoloration or iridescent appearance on the surface or shoreline of any water? If yes, please identify all such persons and describe those observations;

Response: **There was no oil released and no sheen of any kind observed.**

c. Did you observe any oil sludge or oil emulsion beneath the surface or on the adjoining shorelines of any water? If yes, please describe your observations;

Response: **There was no oil released and no oil sludge or oil emulsion could have been formed or occurred.**

d. Did, to your knowledge, any other person observe any oil sludge or oil emulsion to be deposited beneath the surface or on the adjoining shorelines of any water? If yes, please identify all such persons and describe those observations.

Response: **There was no oil released and no oil sludge or oil emulsion was observed.**

15. Describe any damage to animal life or vegetation that you observed or otherwise have knowledge of.

Response: **The DEP conducted an inspection in connection with the Pipeline Discharge on October 7, 2009 and identified a loss of approximately 200 to 300 minnows collectively weighing approximately 1 pound. At the time of inspection, the DEP also observed what appeared to be a sewage discharge upstream (unrelated to Range Resources' operations) from the point of the Pipeline Discharge into the unnamed tributary.**

16. List the name, address, telephone number, and affiliation of any and all persons who made any observations in response to Questions 14 and 15.

Response: **Range Resources is aware of the following people and/or contractors which were involved in the response to the Pipeline Discharge:**

- **Tony Gaudlip (Range Resources)**
- **Ralph Tijerina (Range Resources)**
- **Sean Hoghes (Range Resources)**
- **Jeremy Matinko (Range Resources)**
- **Matt Werner (Range Resources)**
- **Red Oak personnel, the names of whom are not available readily to Range**
- **Bryon Miller (DEP)**
- **Vince Yantko (DEP); and**
- **Brian Dillemoth (DEP).**

17. Identify the effect of the spill(s) on any water supply and give details if available (e.g., shutdown of public or private water supply). Provide the names and addresses of all persons that have been provided with an alternative water supply (e.g., bottled water) due to the spill or because of the threatened migration of contamination.

Response: **There were no effects of any kind on any water supply.**

18. Does the facility have a National Pollutant Discharge Elimination System (NPDES) Permit or permit application? If yes, provide the permit number or, if no permit number has been issued at the time, the date upon which the application was filed.

Response: **The Pipeline did not have an NPDES permit and none was required.**

19. If the substance(s) was discharged from an outfall, state whether the outfall was covered by an NPDES permit issued pursuant to Section 402 of the Act.

Response: **There was no discharge of any substance from any outfall.**

20. Identify all NPDES or state wastewater discharge permit conditions and/or water quality standards that may have been violated by the spill.

Response: **There were no NPDES or state wastewater discharge permit conditions or water quality standards violated.**

21. Provide a complete description of the cause or causes of the discharge (e.g., pump failure, by-pass of treatment system), as well as any other relevant circumstances. If the discharge was caused by the actions of a third party (for instance, as the result of an accident or vandalism), describe in detail the measures that were in place to prevent such actions. For vandalism, identify any enforcement agencies to which the owner or operator reported the vandalism.

Response: **As described in Responses to Request Nos. 1, 2 and 5 above, the 90 degree Elbow in the Pipeline, which was located on an uphill end of a culvert, ruptured, due to a manufacturing defect, allowing the release of diluted flowback water. The Pipeline was later inspected by its manufacturer, which identified the Elbow as defective. The**

Pipeline had been pressure tested with freshwater prior to its use for diluted flowback water.

22. Describe all steps taken to contain and cleanup the spill(s) and to mitigate any environmental damage and/or threat to human health.

Response: **Upon discovering the Pipeline Discharge, Range Resources and Red Oak undertook to contain the release. Red Oak immediately stopped the related pump and the flow through the Pipeline was stopped. A vacuum truck was brought to the site, where it removed approximately 500 gallons of the released diluted flowback water. Absorbent material was used in the immediate area to soak up residual water. Additionally, the area was flushed with approximately 1,200 gallons of fresh water.**

23. Describe any actions taken or planned to prevent the recurrence of incidents such as the release(s) identified above.

Response: **Although this spill was not preventable since it resulted from a latent manufacturing defect in the Elbow that was not revealed during pressure testing, the defective Elbow was replaced with a longer curved elbow coupling to reduce the possibility of pressure surge effects. Additionally, Range Resources updated its Preparedness, Prevention, and Contingency Plan ("PPC") to include an Appendix for water transfer operating standards.**

24. List the names, addresses, telephone numbers, and affiliations (e.g., name of governmental agency, contractor, or other entity) of all persons who were on the scene during the incident and/or during cleanup operations, as well as any other persons not present but otherwise believed to have knowledge of the facts surrounding the incident or incidents. For each person identified in response to this question, provide the time period during which they were present at the facility. In responding to this question, for each complaint by an individual you have received related to your operations at the Facility, provide the person's name and phone number, as well as any written record of that

complaint or a written narrative describing any oral complaint; Provide any subsequent communications with the party(ies) that filed the complaint.

Response: **Range Resources is aware of the following people and/or contractors which were involved in the response to the Pipeline Discharge:**

- **Tony Gaudlip (Range Resources)**
- **Ralph Tijerina (Range Resources)**
- **Sean Hoghes (Range Resources)**
- **Jeremy Matinko (Range Resources)**
- **Matt Werner (Range Resources)**
- **Red Oak personnel, the names of whom are not available readily to Range**
- **Bryon Miller (DEP)**
- **Vince Yantko (DEP); and**
- **Brian Dillemoth (DEP).**

25. Provide the date on which operations began at the Facility. Identify all Natural Gas Production Facilities (NGPFs) (as further defined in Enclosure 1) owned and/or operated by you connected to or otherwise associated with the Facility at any time. Identify all components of each NGPF, including but not limited to wells, piping, tanks, other equipment, and surface impoundments.

Response: **See Responses to Request Nos. 1, 2, 5 and 21. By way of further response, Range's Bednarski Impoundment is subject to ESCGP-1 Permit No. 0063-08-8-005 and Dam Permit No. DOG6309-0002. The Bednarski Impoundment has a capacity of 260,000 barrels. Additional information regarding the Bednarski Impoundment may be located in the Erosion and Sedimentation Control/Stormwater Management Plan for the Bednarski Fresh Water Impoundment, a copy of which is attached hereto at Tab 1. Range's Kearns Impoundment is subject to ESCGP-1 Permit No. 0063-08-8-002. The Kearns Impoundment has a capacity of 190,000 barrels. Additional information regarding**

the Kearns Impoundment may be found in the Erosion and Sedimentation Control Plan Narrative, a copy of which is attached hereto at Tab 2.

26. Provide the name(s) and address(es) of the owner(s) of the Facility described above in Question 25. In doing so, for all production facilities identified in response to Question 25, state the date that the owner obtained ownership and/or control over the production facilities and provide all documents evidencing or relating to such ownership, operation or lease, including but not limited to purchase and sale agreements, deeds, and leases.

Response: Range Resources is the operator and maintains control over the equipment and facilities.

27. Identify all drill pads and/or drill rigs owned and/or operated by you at or within 10 miles of the Facility at any time. For each drill pad and/or drill rig, identify the year on which that drill pad and/or rig was installed at its present location and any past location.

Response: Such operations information is not in any way relevant to or within the scope of the EPA inquiry. That notwithstanding, Range Resources operates multiple wells within 10 miles of the Discharge location. All of these wells are being drilled or have been drilled into the Marcellus Shale and information about such operations is available through the public records of the DEP.

28. Provide the name and address of the operator(s) of the Facility described above in Question 25 and describe the relationship between the owner(s) and operator(s) (i.e., employee, subcontractor, lessee, etc.). Identify any persons who concurrently with you exercised actual control or who held significant authority to control activities at the Facility at any time. In answering this question, include:

a. Partners and/or joint ventures;

b. Every contractor, subcontractor, or licensor with any presence or activity at the Facility (e.g., service contractors, remediation contractors, management and operator contractors, licensor providing technical support for licensed activities);

c. All persons who exercised actual control over any activities or operations at the Facility;

d. All persons who held significant authority to control any activities or operations at the Facility;

e. All persons who had a significant presence or who conducted significant activities at the Site;

f. All government entities that had proprietary (as opposed to regulatory) interest or involvement with regard to the activity at the Facility.

Response: Range Resources is the operator and maintains control over the equipment and facilities. Red Oak is a contractor engaged in the transfer of the diluted flowback water between the Bednarski Impoundment and the Kearns Impoundment.

29. Identify all prior owners and operators of the production facilities identified in response to Question 25 and the drill pads identified in response to Question 27. For each prior owner/operator, identify:

a. The dates of installation, ownership, and/or operation;

b. All evidence of the activities that were conducted at the production facilities and drill pads at that time, including but not limited to any information about wells installed, operated, and/or decommissioned during any period of prior ownership/operation;

c. All integrity test results, materials inventories, and/or notifications and reports made to and received from local, state, and federal authorities; and

d. Any information you have access to regarding the substances used in connection with the production facilities during any period of prior ownership/operation.

Response: Range Resources owns and operates the natural gas wells identified in Question 27. There are no prior owners/operators of these wells.

30. Describe the nature of the work conducted by you at each NGPF identified in response to Question 25. For each NGPF owned or operated by you, provide information on the installation, operation, and maintenance of those production facilities. Your response should include, but not be limited to the following for each well:

a. The name or identifier of each well;

b. Well construction information (including specifications on casing depths, cement tops/bottoms, and perforated zones);

c. Well maintenance information (including logs and inspection records);

d. Well incident information (including fluid loss during drilling or storage, cement loss, problems during hydraulic fracturing or other operations). Provide any root cause analysis conducted and corrective actions taken in response;

e. Well lithologic logs (also known as "mud logs"); and

f. The constituents contained in as well as the quantities of those constituents in any produced water, brine and/or, any other fluids associated with those wells.

Response: The requested information is not in any way relevant to or within the appropriate scope of the EPA request. That notwithstanding, Range Resources operates multiple wells within 10 miles of the Discharge location. All of these wells are being drilled or have been drilled into the Marcellus Shale and information about such operations is readily available through the public records of the DEP.

31. Identify any contractors used by you that conducted any activities related to the wells identified in response to Question 30. For each contractor, identify:

a. The dates that they conducted work;

b. The nature of the work they conducted.

Response: The requested information is not in any way relevant to or within the appropriate scope of the EPA request. Range Resources operates multiple wells and uses several contractors in support of well activities.

32. Identify any other leaks, spills, or releases of oil and/or hazardous substances into the environment that have occurred from the Facility. For each such release, provide the following:

a. date;

b. duration of the release;

c. substance(s) released;

d. the approximate quantity of the substance(s) released;

e. the origin of the release;

f. the cause of the release;

g. the location of the release;

h. any and all activities undertaken in response to each such release or threatened release, including the notification of any agencies or governmental units about the release;

i. The result of any and all investigations of the circumstances, nature, extent or location of the release or threatened release, including the results of any soil and water (ground and surface) testing undertaken;

j. Whether any persons were provided with an alternative water supply; and

k. All persons with information related to these releases.

Response: **There have been no such releases from the Facility.**

33. Provide any other reports, information or data related to activities conducted at or near the wells by you, your predecessors, contractors, and/or any other entity.

Response: **The requested information is not in any way relevant to or within the appropriate scope of the EPA request.**

34. Provide a complete inventory of any compounds used at all NGPFs identified in response to Question 25. Include the chemical composition, characteristics, physical state of each compound, along with the MSDSs, CAS Numbers, and product names.

Response: **The material that was discharged was diluted flowback water. Range Resources is currently achieving its goal of recycling and reusing all flowback waters. Flowback water results after hydraulic fracturing well stimulation. The produced flowback water does contain small amounts of sand and small concentrations of additives that are introduced into a well for the purposes of hydraulic fracturing. This water also contains small concentrations of salts and minerals that are dissolved from the shale formation. Range Resources is unable to specifically identify the sources, the precise**

contents, or the concentrations of materials that were released. Flowback water from several wells was transported to an impoundment where freshwater was added for recycling and reuse. This combination of flowback water and freshwater was being pumped to another location to be used for future hydraulic fracturing operations when the discharge occurred due to a manufacturing defect in a pipefitting. Although the precise sources of the material actually released is not precisely known, a sample of diluted flowback water was taken from the piping involved and sent for characterization with the following results:

- pH = 7.7
- Chloride = 11,000 mg/L
- Specific Gravity = 1.015
- Hardness = 37.4 mg/L
- Calcium = 1503 mg/L
- Iron = 3 mg/L
- Bicarbonate = 146 mg/L

Frac water typically utilized by Range Resources consists of approximately 99.86 percent water (94.62 percent) and sand (5.24 percent). Frac water additives other than water and sand are typically used as follows:

Additive Type	Compounds	Approximate Concentration
Scale inhibitor	Ethylene glycol, alcohol, and sodium hydroxide	.01 percent
Antimicrobial agent	Glutaraldehyde, ethanol, and methanol	.06 percent
Friction reducer	Polyacrylamide	.05 percent

Diluted Acid	**Hydrochloric acid**	**.03 percent**

Based upon the chlorides concentration, it is estimated that the flowback water was diluted approximately 4:1, freshwater:flowback water. Based upon DEP Form 26R information, no reportable quantity release occurred. This is based upon a calculation that hazardous substances with a reportable quantity of one pound would have to be present at a concentration above 50 ppm; hazardous substances with a reportable quantity of ten pounds would have to be present at a concentration above 500 ppm; and etc. Based upon these calculations, no hazardous substances were discharged above reportable quantities. Further, there was no oil present or released.

35. Provide all documents, reports, information, or data collected related to the substances placed into and taken from the wells possessed by you or any party related to you by contract or otherwise. Your response should include, but not be limited to:

a. Analysis of production water constituents;

b. Analysis of condensate constituents;

c. Drilling fluid components (Material Safety Data Sheets (MSDSs), Chemical Abstract Systems (CAS) Numbers, product names;

d. Water/geochemistry analysis from discrete production zones.

e. Provide the following information (including any reports that include such information) related to the injection of substances into the wells by you or any other person, including but not limited to:

f. Hydraulic fracturing fluid components (including MSDS, CAS Number, product names);

g. Workover fluids (including all underlying components of workover fluids) (including MSDS, CAS Number, product names);

h. Formation fracturing records for wells (including the depths and dates).

Response: The material that was discharged was diluted flowback water. Range Resources is currently achieving its goal of recycling and reusing all flowback waters. Flowback water results after hydraulic fracturing well stimulation. The produced flowback water does contain small amounts of sand and small concentrations of additives that are introduced into a well for the purposes of hydraulic fracturing. This water also contains small concentrations of salts and minerals that are dissolved from the shale formation. Range Resources is unable to specifically identify the sources, the precise contents, or the concentrations of materials that were released. Flowback water from several wells was transported to an impoundment where freshwater was added for recycling and reuse. This combination of flowback water and freshwater was being pumped to another location to be used for future hydraulic fracturing operations when the discharge occurred due to a manufacturing defect in a pipefitting. Although the precise sources of the material actually released is not precisely known, a sample of diluted flowback water was taken from the piping involved and sent for characterization with the following results:

- pH = 7.7
- Chloride = 11,000 mg/L
- Specific Gravity = 1.015
- Hardness = 37.4 mg/L
- Calcium = 1503 mg/L
- Iron = 3 mg/L
- Bicarbonate = 146 mg/L

Frac water typically utilized by Range Resources consists of approximately 99.86 percent water (94.62 percent) and sand (5.24 percent). Frac water additives other than water and sand are typically used as follows:

Additive Type	Compounds	Approximate Concentration
Scale inhibitor	Ethylene glycol, alcohol, and sodium hydroxide	.01 percent
Antimicrobial agent	Glutaraldehyde, ethanol, and methanol	.06 percent
Friction reducer	Polyacrylamide	.05 percent
Diluted Acid	Hydrochloric acid	.03 percent

Based upon the chlorides concentration, it is estimated that the flowback water was diluted approximately 4:1, freshwater:flowback water. Based upon DEP Form 26R information, no reportable quantity release occurred. This is based upon a calculation that hazardous substances with a reportable quantity of one pound would have to be present at a concentration above 50 ppm; hazardous substances with a reportable quantity of ten pounds would have to be present at a concentration above 500 ppm; and etc. Based upon these calculations, no hazardous substances were discharged above reportable quantities. Further, there was no oil present or released

36. Provide all reports, data or other information related to soil, water (ground and surface) and geology/hydrogeology at and around the Site. Provide copies of all documents containing such data or information, including past and present aerial photographs as well as documents containing the basis for and/or analysis or interpretation of that data or other information.

Response: **Range Resources is not aware of any responsive information other than that which is included with the incident report enclosed herewith.**

37. Describe the storage units at the facility (e.g., above ground tanks or underground tanks) and provide the types of substance(s) stored and the total storage capacity of each storage unit by name and CAS number. In answering this question, include substances and capacities of "oil-filled equipment" and "mobile refuelers" that are defined in Enclosure 1. Identify the storage units and provide the storage capacity of each unit identified with each NGPF and identify the types of substance(s) stored and the total storage capacity of each storage unit by name and CAS number for those units. In responding to this question, indicate whether each substance is an oil and/or a hazardous substance.

Response: **The Discharge involved pipeline transport of diluted frac water from and to impoundments. No aboveground or underground tanks were involved.**

38. Has any contaminated soil ever been excavated or removed from areas around or near the wells?" If so, provide the following:

a. Amount of soil excavated;

b. The substances contained in the excavated soil;

c. Location of excavation;

d. Distance from a navigable water of the United States or an adjoining shoreline;

e. Description of the pathway from the excavated soil area to a navigable water of the US or an adjoining shoreline, including topography and an analysis of whether the materials could reach a navigable water or adjoining shoreline;

f. Any information, including data, maps, and reports, related to any plume of substances associated with any soil excavation.

Response: **The Discharge involved pipeline transport of diluted frac water from and to impoundments. There are no contaminated soil excavations associated with this activity. The Discharge occurred a considerable distance from any and all well activities.**

39. If the Owner or Operator has in place a Spill Prevention, Control and Countermeasures ("SPCC") Plan pursuant to 40 C.F.R. Part 112, a Facility Response

Plan ("FRP") prepared pursuant to 40 C.F.R. § 112.20, a state oil spill prevention plan, and/or some other spill prevention plan, provide EPA with a copy of all such plans. Please indicate whether a professional engineer prepared and/or certified any plan in place at the Facility. In the event the plan is undated, provide the date(s) on which the plan was prepared and implemented.

Response: **As of the date of the Pipeline Discharge, a PPC Plan existed. As described in the Response to Request No. 23, the PPC Plan has since been updated. A copy of the original PPC Plan is attached at Tab 3 and the updated PPC Plan at Tab 4.**

40. Provide a description of all procedures used to prevent and/or contain spills of substances from the Facility. This description should indicate the tanks, tank cars, tank trucks, or other equipment that are protected by dikes, the amount of material that can be contained by each dike, and the number of tanks, tank cars, tank trucks, and other equipment protected by each dike.

Response: **A copy of the PPC Plan is attached at Tab 4.**

41. Indicate the material used to construct each dike and the condition of each dike listed in Question 40.

Response: **No dikes were constructed.**

42. In the event that the Owner or Operator does not have in place a SPCC Plan, FRP or state oil prevention plan, describe any actions taken or proposed to prevent the recurrence of any spill identified in response to Question 1.

Response: **As of the date of the Pipeline Discharge, a PPC Plan existed. As described in the Response to Request No. 23, the PPC Plan has since been updated. A copy of the original PPC Plan is attached at Tab 3 and the updated PPC Plan at Tab 4. Although this spill was not preventable since it resulted from a latent manufacturing defect in the Elbow that was not revealed during pressure testing, the defective Elbow was replaced with a longer curved elbow coupling to reduce the possibility of pressure surge**

effects. Additionally, Range Resources updated its PPC Plan to include an Appendix for water transfer operating standards.

43. List any other information you wish to bring to the attention of the federal government at this time related to this matter.

Response: **None at this time.**

Certify the information provided in response to the above questions in the following manner:

I hereby certify the above to be true and accurate to the best of my knowledge.

Signature: Carla Suszkowski

Name (Please print or type): Carla Suszkowski, P.E.

Title: Director, Regulatory and Environmental

Telephone Number: 724-873-3226